How cities can foster local action in energy efficiency by utilizing middle actors – insights from a Swiss case study

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Abstract

While national policies create settings incentivizing energy efficiency, actual savings are often much lower than what would be technically feasible and economically viable. Reasons for this so-called efficiency gap include individuals not recognizing the need to consume less energy, not having the interest to implement the required changes, or that national policies may simply be ill-fitting to local contextual constraints. Due to their close link to citizens communities are in a key position for closing the efficiency gap. However, as they have limited access to either hard or soft policy instruments, they need to rely on leading by example and providing a fertile ground for local action. Therein, intermediaries (or 'middle-actors') play a bridging role. They comprise a heterogeneous group of actors, including schools, leisure or sports associations, construction firms, and energy-related businesses. Distinctively, they work, directly or indirectly, to implement or advise on energy related decisions (e.g., choice of heating systems), distil information, mediate social or technical relations, set behavioral norms, or motivate community action.

An ongoing project in Switzerland addresses the question of how communities can foster local action on energy efficiency utilizing intermediaries. It follows a three-step procedure: 1) Potentially relevant actor groups on a communal level are identified and characterized using structured interviews with experts from academia and practice (e.g., communal energy consultants). The characterization includes the different actors' potential to promote energy efficiency, as well as their motivations to do so. 2) In a case study in the city of Baden (pop. 18,000) the list of actors and their characterization are validated in a workshop with city officials and subsequent interviews with selected intermediaries. 3) This allows developing an empirically validated framework of local intermediaries for communal energy policy. In the paper at hand we embed the study in the current Swiss energy policy as well as in the academic discourse on closing the efficiency gap, and present its concept along with some first insights.

Background – the role of Swiss cities in promoting energy efficiency

SWITZERLAND'S POLICY ON CURBING ENERGY DEMAND

The Swiss government has defined clear targets for reducing energy demand. In its new national energy strategy, Switzerland aims to reduce per-capita energy consumption by 43 percent by 2035 and by 54 percent by 2050 from the 2000 level (Swiss Federal Council, 2013). There are two main motivations for setting these targets. The first is the country's international commitment to reducing carbon emissions for combatting climate change (20% by 2020 compared to 1990, Swiss Federal Parliament, 2013). The second, which is particularly important in the current public discourse on the future of the Swiss energy system, are concerns over national energy independence (Blumer, Moser, Patt, & Seidl, n.d.). These concerns are primarily a consequence of the joint decisions by the Swiss government and the parliament to phase out nuclear power. This decision was made in the aftermath of the accident at the

Fukushima power plant in Japan and the consequent limitation of domestic electricity production alternatives, as at the moment 40 % of the electricity produced in Switzerland comes from nuclear power. Together with hydropower, it almost fully covers the domestic electricity demand.

To achieve its ambitious targets, the government aims to tighten a variety of existing energy efficiency programs (Swiss Federal Council, 2013). Most of these focus on shaping the regulatory framework in such a way that investments in energy efficiency and, to a lesser extent, changes in energy consumption patterns pay off for consumers. One key instrument is the steering tax on carbon emission from heating fuels. It is currently 60 Swiss Francs per ton of CO_2 (about 50–60 Euros) and the government retains the right to further raise it, if needed. The revenues are redistributed to the population via healthcare tariffs, except for a specified part (currently up to one third of all revenues) that is used to subsidize energy-related renovations in existing buildings. Meanwhile, companies are covered by a program that incentivizes their participation in a so-called target agreement scheme. In this arrangement, the company and a public agency jointly agree on binding energy efficiency targets (Scheidegger & Aerni, 2014). In parallel to these instruments, efficiency standards – be it for buildings, for cars or for electric appliances – are also becoming continuously more ambitious.

This suite of (primarily) market-based instruments is complemented by *energie schweiz*, a program that was set up in 2001 and has been continually expanded since. It supports the national energy policy goals through information campaigns, education, support of showcase projects, and by coordinating the activities of all relevant actors (UVEK, 2012). In particular, it promotes the European Energy Award (EEA) label, which is awarded to communities that adopt and implement progressive communal energy and climate protection strategies (Forum EEA, n.d.). To ensure a constant engagement of the awarded communities, the EEA is not a onetime award but requires a quadrennial re-certification based on an audit. The EEA label is widespread in Switzerland: as of January 2015, 361 Swiss communities were certified[1], including all major towns and cities (in total, there are around 2,300 communities in Switzerland). This showcases the federal governments' efforts to make communities role models in energy efficiency.

THE KEY ROLE OF CITIES FOR SWISS ENERGY POLICY

Swiss communities, and particularly the larger towns and cities, have a key role in promoting energy efficiency, which goes beyond simply implementing the national energy strategy on a local level: most Swiss cities pursue their own communal energy strategy, which is usually more ambitious than the national strategy with respect to reducing energy consumption. For example, many of the larger cities have adopted the vision of a 2,000 W society – an idea that has become very important in Swiss policy-making. It was developed in the 1990s at ETH Zürich and is based on the idea that a continuous energy consumption of 2,000 W per capita would be sufficient to satisfy the needs of the global population while not overusing global resources (Fink & Stulz, 2012). In some cases it is the local parliament that pushes for such a communal energy goal of a 2,000 W society and in other the local 2,000 W goal was even set by a popular vote and thus enjoys a high level of legitimacy. What is more, cities are also often the owners of the local energy utility, which have extensive technical knowledge and strong ties to energy consumers. Thus, community-owned utilities offer cities an additional lever for implementing their energy policy. This also partly explains why many utilities are active in promoting energy efficiency, even though there is no national saving obligation scheme for energy suppliers in place yet (Blumer, Mühlebach, & Moser, 2014).

But while Swiss cities have access to a wide range of instruments to reach their energy policy goals (e.g., through spatial planning, issuing building permits, and setting incentives for energy efficiency renovations of buildings), their legal competences are limited. For example, they can neither implement more stringent efficiency standards for electronic devices, nor can they force a homeowner to renovate their insulation. Thus, much of their efforts go into reducing the energy demand of their own buildings and facilities (e.g., schools, office buildings or waste water treatment plants), information campaigns and offering consulting services for commercial and residential energy consumers.

FOCUSING ON ACTORS TO ACHIEVE ENERGY POLICY GOALS

One particular illustrative case is the city of Baden, a small Swiss city of about 18,000 inhabitants. It carries the EEA gold label, i.e. it is one of the leading Swiss energy communities (there are only 14 that have achieved gold status). However, the city's current, now almost ten years old, energy strategy focuses primarily on aspects that the city of Baden can influence directly or via its utility. This is why the strategy's only quantitative energy efficiency target concerns public buildings (i.e. a reduction by 10 % in ten years, see City of Baden, 2006). In the ongoing process of renewing its energy strategy the city of Baden wants to include residential and commercial consumers in their new targets, on whom the city of Baden has only little direct influence. In order to meet these wider targets, it will be inevitable for the city to identify and engage local actors that have means to support the implementation of the communal energy strategy.

These issues are addressed by an ongoing research project aimed at systematically identifying local actors that can support Swiss cities in implementing their communal energy policies by developing channels to engage them in local action. The insights of the study are validated using the city of Baden as a reference case. The overall research question seeks to answer "What local actors are typically relevant in supporting the implementation of communal energy goals, and how can they be characterized?". The paper at hand presents the design and the preliminary results of this research project and discusses its relevance in an international context.

Capturing the potential of intermediaries to close the energy efficiency gap

The challenges Swiss communities are facing in their attempt to reach their ambitious target of a 2 000 W society links well to the large body of economic and social science energy research. In particular, the basic problem both national and local

1. http://www.energiestadt.ch/die-energiestaedte/energiestaedte/ (retrieved on January 22.2015)

authorities are facing is that many energy efficiency measures are not being implemented, despite having been made cost-efficient via incentives (e.g. subsidies for energy efficient renovations) and a tax on carbon emissions. This "gap between actual and [cost] optimal energy use" (Jaffe & Stavins, 1994, p. 804) is referred to as the "efficiency gap". The various reasons for the efficiency gap and the barriers that exist for closing it have been extensively discussed and classified (Schleich & Gruber, 2008; Sorrell, O'Malley, Schleich, & Scott, 2004; Sorrell et al., 2000; Weber, 1997). Different disciplinary perspectives shed light on specific conditions leading to the efficiency gap: From an economic perspective, the efficiency gap can be considered a market failure due to too high transaction costs or agency problems. For example, considerable upfront investments are often required to develop a cost-optimal renovation strategy for a house and the homeowners is exposed to noise and other inconveniences during the renovation period. From social science research perspective though, other barriers are often highlighted, such as the need for improving information and education (e.g., through feedback mechanisms, Fischer, 2008) or generally a lack of awareness (De Young, 1996). But it turns out as well that information and awareness alone are not enough to change individuals' behavior – individuals may, e.g., feel "unable to individually make a difference" (Breukers, Mourik, & Heiskanen, 2013, p. 778). Societal institutions, including intermediaries or 'middle actors' (Parag & Janda, 2010)[2], have been identified as one key means to activate individuals in closing the efficiency gap and catalyzing the widespread implementation of energy efficiency measures through social, economic, and technological means (Breukers, Heiskanen, Brohmann, Mourik, & Feenstra, 2011; Hargreaves, Hielscher, Seyfang, & Smith, 2013; Hodson & Marvin, 2010). Recognizing the potentials of trusted intermediaries is also one of the key themes of the ongoing IEA DSM Task 24 Closing the Loop – Behaviour Change in DSM: From Theory to Practice[3]. The underlying idea of focusing on social groups is that social groups have shown to be a strong influencer of individual behavior through a variety of mechanisms, ranging from social pressure (such as conformity towards norms Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007) to motivation (such as through social learning Axsen & Kurani, 2012).

In the context of communal energy strategies, such middle-actors may comprise schools; religious, leisure or sports associations; local businesses and companies; construction firms; local chambers of commerce; energy-related businesses and many more. Distinctively, they work, directly or indirectly, to implement or advise on energy related decisions, distil information, mediate social or technical relations, set behavioral norms, or motivate community action. Often, middle-actors can rely on established channels of communications (e.g. existing customers or members of an association) to spread energy-relevant and context specific information. Ideally, intermediaries already enjoy energy consumer's trust and can address specific target groups or individually – both of which have been shown to be key success factors for intervention measures aiming at reducing energy consumption (Breukers, Mourik, & Heiskanen, 2013; Parag & Janda, 2014). They are thus an important link between the communal administration and energy consumers, be it residential or commercial ones.

An illustrative example for the relevance of intermediaries is within the building renovation sector (see, e.g., Killip, 2013; Parag & Janda, 2010): Almost any building renovation measure for non-energy reasons carries a potential for energy-related improvements as well. To unlock this potential, construction experts (e.g. construction managers, consultants, architects, electricians or craftsmen) can act as important intermediaries. They possess the knowledge on the available subsidies or technological options, and can thus advise homeowners. They also play a key role for the choice of the measures taken and the technologies implemented, as they often are the main source of information for homeowners. But while the identification and listing of intermediaries for a specific and well-defined case (such as promoting energetic building renovations, see above, or the comercial building market, see, e.g., Kunkle & Lutzenhiser, 2002) has been done, the problem frame of this papers' research question aims for a broader yet systematic accounting of intermediaries on a city level. This poses a challenge as "intermediary" is a functional definition (Schulz & Baumgartner, 2011). It thus comprises a very heterogeneous group of local actors that can all potentially promote communal energy policy goals but may be quite different in their internal organizations, goals, and the means they have access to reach them (Hodson & Marvin, 2010). Some intermediaries are formal social groups that follow a common interest or purpose (such as NGOs, sports associations, religious groups), others are specific professional groups and local businesses (such as architects, teachers or caretakers in commercial and public buildings), non-formal or loosely-organized groups (investors, homeowners), or simply influential local individuals (community leaders or role models). Notwithstanding this large heterogeneity, actively involving intermediaries in the implementation of local energy policy goals requires a thorough understanding of their characteristics, such as their interests, resources and types of influence they may exert. While a local architecture firm may be a powerful channel to promote zero-energy buildings, this may put the firm into a specific market segment that is less profitable than their current one. Thus, involving intermediaries to achieve specific (policy) goals requires that this involvement is in line with their own goals. From the research, and potentially also the community perspective, it is difficult to determine which intermediaries are present in a region, and then secondly who has business goals aligned with the communal policies. This requires that cities actively promote their energy-related goals and look for opportunities for collaboration.

While the body of scientific knowledge certainly provides a solid stepping-stone to address our research question, there exists currently – to the best of our knowledge – no systematic analysis of intermediaries from a communal policy perspective. Thus, the project at hand is not only relevant for Baden and other Swiss cities, but it also has the potential to yield insights that are of interest to a wider international (scientific and non-scientific) audience.

2. The two terms are used interchangeably in this paper.

3. http://www.ieadsm.org/ViewTask.aspx?ID=17&Task=24&Sort=0 (retrieved: 22 January 2015).

Research design and first insights

PROCEDURE

To address the research question we choose a 3-step procedure. In the first phase of the project we draw from the large body of tacit expert knowledge on communal energy policy in Switzerland. It aims at developing a generic list of (10–20) local actors that can be found in a typical Swiss city and that have the potential to support communal energy policy goals. Each of these intermediaries is briefly described and then characterized according to their goals, means and their available resources to promote local energy policy goals. This will be done based on the insights of 8–12 interviews of about 90 minutes with experts for local energy policy from diverse backgrounds (2–4 per background, see table 1). The interviews are recorded and follow a semi-structured interview guideline that has five phases: (i) we introduce ourselves and the study, (ii) we ask experts for their personal experiences with local energy projects/policies and the role of intermediaries in them, (iii) we have the experts brainstorm a list of local actors relevant to communal energy policy and discuss it with him or her, (iv) we discuss actor constellations that form a particularly conductive (or inhibiting) environment for local energy projects/policies, and (v) we end the interview by summarizing the key insights together with the experts. The interviews are currently ongoing and are planned to be concluded by April 2015. The interviews are analyzed in an exploratory way, iteratively developing a set of codes (e.g. referring to the different actors and interactions of them with city officials that were mentioned by the expert).

In the second step of the Study (April–May 2015) we will conduct a reality check of the list of local middle-actors developed in the expert interviews. The Swiss city of Baden (for details on the situation, see background section) will serve as a validation case. This comprises a workshop of half a day with city officials (in particular the communal energy coordinator) and will be structured as follows:

1. Checking whether the generic list of middle-actors identified by the experts is applicable to the situation of Baden. (Is there in the city's area a corresponding organization or person for each of them? Are there other important ones that are missing on the list?)
2. Learning about the cities' past experiences when dealing with these organizations and individuals. (Would these intermediaries be suited to promote the city's energy strategy? If so, how would one best approach them?)
3. Jointly selecting 5–7 local key actors for promoting the cities' energy policy goals. In previous meetings with city officials, the local association of homeowners as well as the largest employer in the city (a large international engineering company) have already been selected as two potentially interesting key actors.

In subsequent structured interviews with these selected key actors, in which both a researcher and the city's energy coordinator will participate, the willingness of these intermediaries to be engaged in energy-related activities will be explored in order to better understand their specific rationalities when it comes to energy policies.

Eventually, in the third step of the study (May–July 2015) both the generic and case specific insights will be integrated to develop a guideline for Swiss cities of how they can make use of local intermediaries in their communal energy strategies. For that, there will be a workshop of half a day that includes not only representatives of the different expert groups interviewed in step one, but also a representative of the city of Baden that brings in case specific knowledge, as well as a representative of the Swiss Federal Office of Energy to bring in the national perspective. One the one hand, this guideline is supposed to comprise a searchable list of 10–20 typical local actors that may act as intermediaries for the implementation of communal energy strategies, including their characteristics, potential areas of activities and links to the city administration (e.g. the city planning department or the sports department). On the other hand it comprises a short document (5–10 pages) that provides practical inputs for communal energy officers on how they may extend the city's room for maneuvering by utilizing middle actors as an additional channel to reach specific energy policy goals.

FIRST INSIGHTS

As the research project only started in November 2014, we are currently[4] in the middle of the series of expert interviews as described above (step 1). Following are some initial insights from the first five interviews conducted so far:

First, all the interview partners agree that utilizing local intermediaries is a promising strategy to reach the communal energy goals. Most of the experts were easily able to come up with several examples of successful communal energy projects in which intermediary organizations or driven individuals have played a crucial role. In fact, many Swiss communities have started to –more or less – actively approach and involve middle actors in the implementation of their energy policy, be it the local utility or be it a bike-to-sports campaign with local sports clubs. However, particularly one expert also brought up examples of local actors that have actively hindered the implementation of an energy projects. Thus, a systematic analysis of intermediaries may also have to include the actors, whose interests may not be in line with those of the community. In particular, this raises the question of how communities can design inclusive processes that engage these actors proactively.

Second, local industries and businesses are interesting intermediaries for two reasons. First, in a city like Baden where local industry consumes a large share of electricity, they are important target actors for improving the energy efficiency of industrial processes. However, these industries are oftentimes also large employers of the local population. In this respect, they may take the role of an intermediary to promote energy saving to their employees as role models (e.g., efficient use of electricity in the building, policies to shut down unused appliances, parking regime, bike station or promoting different modes of transportations for business trips).

Third, while local intermediaries may be crucial for achieving some local energy policy goals, others require regional collaboration as they cannot be solved by cities alone – with or without the involvement of local intermediaries. For exam-

4. As of March 16, 2015.

ple, offering citizens a more efficient alternative to using cars may be achieved by offering them an attractive regional public transport system that is fast, reliable, and dense. This is only possible if several communities, as well as the regional and national authorities work together.

Fourth, it is clear that there exist a variety of different local actors that have the potential to act as intermediaries for communal energy policies. However, the key challenge is to motivate them to participate in such a program: many of them (especially sports or youth clubs) are already in the focus of a large number of different initiatives for other causes (ranging from weight loss programs to campaigns to stop domestic violence) and also of commercial marketing activities for a variety of different product and services. In order to really make these organizations embrace the energy issue cities must find ways to align with their interests. For example, one cost effective incentive cities provide to local sports and leisure associations in exchange for participating in certain programs (that are not necessarily energy-related) is public visibility, e.g. in communal newspaper or in public display cases. What is more, apart from the mere list of intermediaries their ties to different departments of the city administration are of interest. By systematically identifying such ties cities could develop communal actor maps, would allow them to quickly identify key intermediaries for a specific issue and the communication channels that already exist to address them (Figure 1 depicts a schematic representation of the ideal of such an actor map).

Fifth, one idea that one expert – a communal energy consultant – has also brought up is that cities could not just utilize existing intermediary groups, but actively seek to foster local initiatives of citizens that want to promote an energy transition, e.g. by providing them rooms for their regular meetings or by gving them an official seal of approval. In Switzerland, as in other places, there are many examples of such local initiatives, who have successfully managed to raise impressive amounts of cash to realize renewable projects of considerable sizes.

Table 1. Communal energy policy expert groups. For, for each of which 2–4 interview.

Backgrounds of the Experts	Expertise
Managers energy departments	Managers of communal energy departments are responsible for the implementation of the local energy policy goals. They usually have the best overview of successful (and unsuccessful) energy projects or policy programs in the region and what the key intermediaries were in these processes.
EEA Consultants	EEA consultants consult different communities in how they can achieve their energy policy goals. They also make audits, assessing the stringency of communities in curbing energy demand and promoting renewables. This is why they have a good overview of different communal energy policies and measures and know best practice examples of how to implement them.
Energy project developers	Energy project developers are experienced in planning and realizing large energy projects on a community level, such as a district heating system. Thus they have a good understanding of potential supporters of such projects, but also what types of implementation procedure may trigger public opposition.
Researchers	Researchers that have studied communal decision processes are key experts when it comes to better understanding specific constellations of intermediaries that can amplify (or inhibit) the implementation of energy policies.

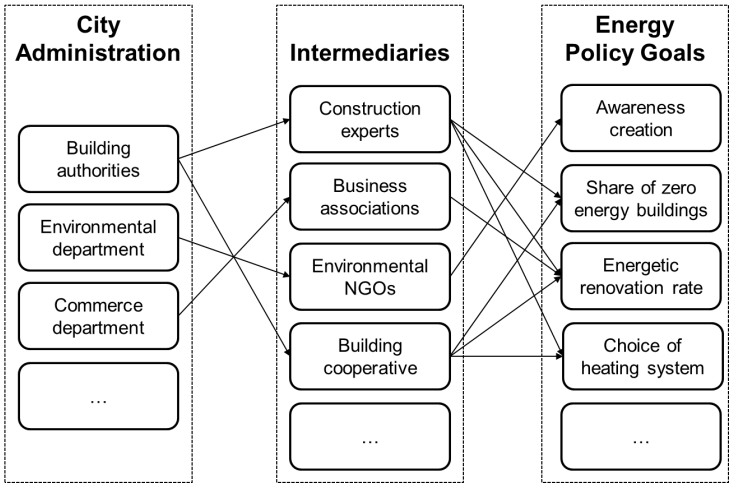

Figure 1. Schematic network representation (actor map) of intermediaries for communal energy policy.

Discussion and outlook

The ongoing study on middle-actors for Swiss communal energy policy links to the international trend of local actors becoming an ever more important driver of energy transitions. This is why the insights of the project are not just relevant for Swiss cities, but as well for local policy-makers and initiators of local energy initiatives in other countries. Countries where local action is a key factor shaping the energy system are, for example, the UK (where the focus is primarily on reducing carbon emissions, DECC, 2014; Walker, Hunter, Devine-Wright, Evans, & Fay, 2007), and Germany (Fuchs & Hinderer, 2014). However, what may be special about the Swiss situation is that it is usually not formalized non-governmental bodies (as it is mostly the case in the UK, Mayne, Parag, Bergman, & Hamilton, 2013) or local cooperatives but the communities themselves that set local energy efficiency goals and are in charge of the process of meeting them. This approach is certainly not the fastest, as the local administration is bound to the general standards of governance, such as ensuring fair and transparent decision processes, which is time consuming. On the other hand it ensures continuity – city officials are less likely to fall victim to fatigue after a couple of years than volunteer activists – and a certain level of legitimacy. While the Swiss insights may therefore not be fully transferable to other contexts, they nonetheless provide an interesting input both for local policymakers and also for the international scientific discourse on the role of middle actors in closing the efficiency gap. In particular, to develop a better general understanding of the key mechanisms and actors in local action on energy, more knowledge transfer between different contexts is needed – both on the level of practitioners (e.g. city officials) and of researchers.

Abbreviations

EEA European Energy Award

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